

Hertz Foundation Scholars Program



Program Description

Summer 2001 was the inception of the Hertz Foundation Scholars Program at the Laboratory. The program provides summer graduate research associate positions to Hertz Foundation Scholars who are working towards a Ph.D. degree in applications of the physical sciences ranging from electrical engineering to molecular biomedicine. The Laboratory recognizes these young men and women as having some of America's most promising technical talent and having received recognition from one of the most prestigious foundations in the nation. The average GPA of the group, which participated in the program this year, was 3.87.

Hertz Scholars are recruited from the list of finalists who are competing for the Hertz Foundation Graduate Fellowship award. To be eligible, a student's major must be in applied sciences (i.e., aeronautics, modern biology, computer science, material science, etc.). The Hertz Foundation only accepts applications from students who will be attending one of three-dozen prominent graduate schools (Table 12). Only about twenty-four students actually receive the "fellowship" award that consists of a cost-of-education allowance and a personal-support stipend. Los Alamos National Laboratory contacts all of the finalists to offer them summer research opportunities.

These graduate students work beside some of the Laboratory's best mentors. The contribution that these students bring to the Laboratory in such a short time is remarkable. As it is extremely important to the future of the Laboratory to

attract the next generation of quality scientists and engineers, this is a partnership that has promising prospects.

Schools Attended by FY01 Hertz Scholars Program Participants

When the Hertz Fellowship awards were announced in April, the Laboratory received copies of the Hertz applications of the finalists and the Fellows. The Science and Technology Base Education Program Office contacted each of these students to determine if they would be interested in a summer research position. Those who were attracted by the challenging research that Los Alamos National Laboratory has to offer responded to our invitation.

At this point a search for the best mentor and research experience was pursued. Some of these talented students actually had several research

Table 12. Hertz Student Statistics

Undergraduate/Graduate School	Number of Students
Cornell University	1
Harvey Mudd College	1
United States Military Academy	1
University of California at Berkeley	3
University of Central Florida	1
University of Illinois at Urbana-Champaign	3
University of Tennessee at Knoxville	1
University of Texas at Austin	1

Table 13. Hertz Student Major and Specialization

Major	Specialization
Material Science and Engineering	
Civil Engineering	Structures
Physics	Astrophysics
Mechanical Engineering	Fluid Mechanics
Physics	Condensed Matter Physics
Materials Science	Transmission Electron Microscopy
Geological Sciences	Geochemistry
Chemistry	Synthetic Polymer Chemistry
Electrical Engineering	Communications/RF
Mechanical Engineering	Controls/Robotics
Bioengineering	Medical Imaging

offers and were allowed to choose the option that best fit their studies (Table 13).

Performance Objective and Milestones

The principal objective of the Hertz Foundation Scholars Program is to encourage some of our nation's finest graduate talent to share their expertise with the Laboratory and to provide these students a challenging and unique research opportunity, with the ultimate goal being to recruit them into the Laboratory work force. Participants will have access to facilities and state-of-the-art equipment at Los Alamos not ordinarily available on a university campus, as well as contact with many of the world's most illustrious scientists.

The enriched summer research sessions will enable the students to

- Increase their knowledge and skills in their fields of study
- Increase their understanding of the research process
- Increase their understanding of national laboratories and the important research being accomplished at these facilities
- Strengthen and focus their fields of study and career plans

Strategically, this program targets Los Alamos National Laboratory's *Institutional Goal #7*: "Focus on diverse, entry-level and strategic hiring." Diverse and entry-level students make up this program. Participants will be tracked throughout their graduate studies to ensure that Los Alamos National Laboratory will be a viable and challenging option when they are ready for postdoctoral appointments or permanent employment.

Highlights of this Year's Accomplishments

The twelve participating Hertz Foundation scholars arrived from May through July and most were able to experience at least ninety days of research at the Laboratory. Besides the camaraderie they experienced by having adjacent rooms at their housing location, there were two social events.

Luncheon Hosted by Dr. John Browne, Director of the Laboratory

On July 11, 2001 Dr. John Browne hosted an informal luncheon to recognize the Hertz Foundation scholars. In addition to the Director and the scholars, those in attendance included the Deputy Director for Science and Technology, the Chair of the Hertz Foundation Board of Directors, and the Science and Technology Base

Education Program Office (STB-EPO) staff who were directly involved in recruiting and placing the students. The students were welcomed, and lunch was followed by an informative Q&A session led by the Director.

Discussion/Recruiting Gathering

On August 7, 2001 the students met at an STB employee's home to discuss each of their research experiences, mentor information, recruiting suggestions for the next group of Hertz scholars, etc. Follow-up and continuing contact with STB and each of his/her individual mentors was encouraged at this meeting. A report was compiled of the suggestions that were gathered (Table 14).

Success Stories from the FY01 Program

- One student's research project proved to be so successful that his mentor sent him to a conference in Edinburgh, Scotland, in December 2001.
- One student worked on a sensor prototype that has possible patent implications.
- Another student's summer research on computer simulations was submitted to a technical journal for publication.
- One student was honored to be the *only* first-year graduate student to present his work at a Nanomechanics Workshop where Los

Alamos National Laboratory, Sandia National Laboratory, and Pacific Northwest Laboratory were represented, among others.

- One student's works was recognized as assisting national security; his work on a related subject involved assisting with national environmental concerns.
- One of the electrical engineering graduates was nominated for a Laboratory "Distinguished Student Performance Award."

Mentor Comments

"... is an outstanding student, and indeed would be ranked as outstanding if he were already a full-time laboratory staff member. In my 20 years at this laboratory, I have never seen a student with such a combination of technical understanding and mature program leadership."

"... interest in PGE has really helped to jump start our work in this area (CO₂ sequestering), which not only benefits the CO₂ project (a national problem in its own right), but also budding efforts related to PGE and national security. By having her here at the lab, we were able to recognize these other connections..."

"My Hertz fellow turned out to be the most productive summer student I have ever had...He

Table 14. Students' Suggestions for 2002

Housing	Social	Timing
Continue adjacent housing locations	Provide Hertz rental cars or a special low rate, especially for weekends	Earlier offer date needed
Provide at least one VCR, so they can share	Arrange an earlier first "social" gathering	Laboratory offers needed in late February or early March
Have stove and oven available (Housing was in LA Inn for 2001)	Provide a directory of services for local area	
Continue Hertz Foundation subsidized housing	Provide a bulletin board/chat room for students	

has been exposed to the great variety of research going on at a national laboratory. He has commented that he is now considering such places as possible career choices. Before, he thought he would only consider academic careers."

"...Based on (his) work, we feel that we are extending the state of the art in structural health monitoring significantly beyond our competitors' research. As a further attest to the quality of (his) work, I plan to send him to a conference in Edinburgh, Scotland this December to present the work he has done this summer at a conference focused on Smart Structures Technology. The bottom line is that I want more ... to work with in the future. My only suggestion is that we find out earlier in the spring about the Hertz Fellow's availability."

"We hope that his experience at Los Alamos will encourage him to consider a National Lab Postdoctoral fellowship as one of the exciting options to consider upon completion of his graduate degree. Please consider me (as a mentor) for the program next year."

"I am quite impressed with He is very independent and well organized for someone not yet exposed to graduate level research. I highly recommend that other staff members consider mentoring a Hertz scholar in the future."

"... has worked very hard this summer and accomplished a lot. We are certainly looking at a journal publication or two based on the work he has done in the past two months. Since he is a first year graduate student at UC-Berkeley in Materials Science, he came to us with some general background in Materials Science. However, he had no hands-on experience in any of the research tools that we use. He was able to quickly learn physical vapor deposition, scanning electron microscopy...Rarely do we see summer students working so hard and achieving so much in such a short time. He certainly felt proud to be a Hertz Foundation student and that may be part of his motivation. I wish more such

students were available to us at LANL. We are having an informal Nanomechanics workshop on August 20th at LANL and I have invited ... to present his work there. He is the only student presenting his work, all others are post-docs or staff scientists from LANL, SNL, PNNL, etc."

"...She has accomplished an amazing amount in a short period of time and I feel totally blessed to have had a student of her caliber fall into my lap. I would not hesitate to have another Hertz student... Clearly they really screen for the "best and brightest" in this program..."

Student Comments

"My overall experience has been academically and scientifically fantastic."

"It's a great place to do science."

"The Lab is awesome."

First Year Suggested Improvements

For Summer 2002 research sessions we are requesting that STB-EPO receive a list of the finalists from the Hertz Foundation at the end of January 2002. By establishing the number of Hertz students who want to return and determining how many will be arriving for their first time research assignment here at the Laboratory (as early in the year as possible), we will be able to reserve apartments where they can share space and thus allow for more Hertz students to experience the opportunities that abound here at the Laboratory. Secondly, we are requesting that STB-EPO be allowed to make a formal presentation to the interviewees concerning the summer research experience at Los Alamos National Laboratory during the Hertz Foundation Board interviewing process.

Hertz Foundation Scholars Program FY01 Summary

Los Alamos National Laboratory's collaboration with the Hertz Foundation was a tremendous success. This summer's Hertz experience was far

and above whatever we could have imagined! We plan to start the recruiting process at least two months earlier in 2002 in order to recruit a greater number of students. As the Hertz Foundation wants its Fellows to make a moral

commitment to make their “skills available to the United States in times of national emergency...” what better way for them to contribute to the current status of national security.